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EXAMINER	
BERNATZ, KEVIN M	

ART UNIT	PAPER NUMBER
1773	13

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No.	Applicant(s)	
	09/845,743	FEIST ET AL.	
	Examiner	Art Unit	
	Kevin M Bernatz	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-75 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-75 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Amendments to claims 21, 26, 30, 33, 36, 67 and 73 - 75, filed on June 10, 2003, have been entered in the above-identified application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1 – 27, 30 – 53, 56 – 70 and 73 - 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Landin et al. ('774).

Regarding claims 1 - 4, 26 and 30 - 34, Landin et al. disclose a data storage media comprising a substrate comprising at least one plastic portion (*Figure 2, element 8 and col. 6, lines 1 –2 and 42 – 67*), and at least one data layer on said substrate (*elements 6a and 6b*), wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field; and wherein when the energy field contacts said data storage media, said energy field is incident upon said data layer before it could be incident upon said substrate (*col. 2, line 63 bridging col. 3, line 8*).

Regarding claim 26, the examiner reminds applicants that "[t]he transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA

1976) (emphasis in original)" (MPEP § 2111.03). The MPEP explicitly states "[f]or search and examination purposes, absent a clear indication in the specification of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising.".

In the instant case, the basic and novel characteristics of the claimed invention are a substrate possessing a combination of low edge lift, low axial displacement and small surface roughness.

The MPEP further states "[w]hen an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention". In the court case cited in the MPEP, it should be noted the court's finding that "the court noted that appellants' specification indicated the claimed composition can contain any well-known additive such as a dispersant, and there was no evidence that the presence of a dispersant would materially affect the basic and novel characteristic of the claimed invention. ***The prior art composition had the same basic and novel characteristic (increased oxidation resistance) as well as additional enhanced detergent and dispersant characteristics***" [emphasis added] MPEP § 2111.03.

In the instant case, applicants have provided no arguments as to what additional steps or materials are intended to be excluded and, furthermore, the Examiner notes that applicants' specification indicates that additional materials do ***not*** materially effect the basic and novel characteristics (*specification, Paragraphs 0043, 0046 and 0056*).

Therefore, the Examiner has interpreted the transitional phrase "consisting essentially of" as equivalent to "comprising" since applicants there is no evidence of record that the introduction of additional components would materially effect the basic and novel characteristics of the claimed invention.

Regarding the limitations directed to "an edge-lift height" and "an axial displacement peak", the Examiner notes that it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily possess characteristics of claimed products where the rejection is based on *prima facie* obviousness under 35 USC 103. Therefore, the *prime facie* case can be rebutted by ***evidence*** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) *(col. 5, lines 58 – 64; col. 11, lines 1 – 5; and examples).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of "an edge-lift height" and "an axial displacement peak" meeting applicants'

claimed limitations would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed limitations of "an edge-lift height" and "an axial displacement peak" would not have necessarily been present in every embodiment taught by Landin et al., it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables such as the "edge lift height" and "axial displacement peak" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge in the art that low values of the edge lift and axial displacement peak are desired for increased areal recording density. See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding these properties. *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Landin et al. fail to disclose a surface roughness meeting applicants' claimed limitations (i.e. less than 10 Å or less than 5 Å).

However, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variable "surface roughness" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that extremely low (i.e. < 10 Å) surface roughness values are required for near-field high density recording media. See Paragraph No. 27 of the Office Action

mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding the surface roughness

Regarding independent claim 30, the claimed areal recording density is a function of the track width, track density and spatial location of the head relative to the medium, and is not a property solely of the media, per se, and therefor has been given little weight in determining patentability since it is an intended-use limitation (see pertinent prior art cited below). "[I]n apparatus, article, and composition claims, intended use must result in a ***structural difference*** between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. ***If the prior art structure is capable of performing the intended use, then it meets the claim***. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art." [emphasis added] *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02.

Regarding claims 5 – 13, 35 – 38 and 51 - 53, these claims are directed to property limitations of the claimed medium that are not explicitly disclosed by the Landin et al. reference. However, in the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*col. 5, lines 58 – 64; col. 11, lines 1 – 5; and examples).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of:

- a mechanical damping coefficient greater than 0.04 and 0.06 at a temperature of 24 °C (claims 5, 6, 35 and 36);
- a moment of inertia of less than 5.5 x 10^{-3} slug-in^2, 4.5 x 10^{-3} slug-in^2 and 4.0 x 10^{-3} slug-in^2 (claims 7 and 51 – 53);
- a radial and tangential tilt of less than 1° (claims 8 and 38);
- a moisture content which varies less than 0.5% at the claimed test conditions (claims 9 and 37);
- a specific gravity of less than 1.0 (claim 10);
- a resonant frequency of greater than 250 Hz (claim 11);
- a first modal frequency greater than an operating frequency (claim 12); and
- one or less modal frequencies less than an operating frequency (claim 13)

would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed property limitations would not have necessarily been present in every embodiment taught by Landin et al., it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables moment of inertia, the radial and tangential tilt, the moisture content variability, the specific gravity and the number of modal frequencies less than an operating frequency of the substrate, as well as increasing the mechanical damping coefficient, resonant frequency and first modal frequency to values meeting applicants'

claimed limitations since one of ordinary skill in the art at the time of applicants' invention would recognize that controlling all of these properties to within applicants' claimed limitations are necessary, and desirable, to achieve a dimensionally stable, high start-stop time recording media for high areal recording density applications. See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding these properties.

Regarding claims 14, 17, 19, 20, 22, 23, 39, 42, 44, 45, 47 and 48, Landin et al. disclose cores meeting applicants' claimed limitations (i.e. solid or hollow cores having substantially constant thickness) (*Figures 2 – 4b, elements 8, 12a/12b, 32, 33, 35 and 52 – 54*).

Regarding claims 15, 16, 18, 40, 41, 43, 56 – 61, 63 and 64, Landin et al. disclose cores having varied thickness (*Figure 4b, where the core varies from zero to non-zero across the width of the medium – elements 52 – 54*). Landin et al. further teach that the damping layer dimensions can be controlled depending on the area with the greatest vibrational stresses (*col. 5, lines 25 – 30*). The exact geometry of the core is therefore deemed an obvious matter of design choice to control where the most damping occurs (as well as controlling the moment of inertia and specific gravity of the substrate), since such a modification of the core would have involved a mere change in the size of a component. A change in the size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Regarding claims 21, 27, 46, 62, 67, 69 and 70, Landin et al. disclose substrate and core materials meeting applicants' claimed limitations (*col. 5, lines 58 – 64; col. 6, lines 1 – 2 and 42 – 67; and col. 7, lines 23 - 67*).

The limitation "preformed cores" and "formed in situ with said substrate" in claims 24, 25, 49, 50, 65 and 66 are product-by-process limitation and are not further limiting in so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. ***The patentability of a product does not depend on its method of production***. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." [emphasis added] *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113. Once a product appearing substantially identical is found, the burden shifts to applicant to show an ***unobvious*** difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). In the instant case, the final product is deemed to be the same whether the damping material (i.e. "core") was formed along with the rest of the substrate or if the damping material was performed and then made into the substrate.

Regarding claims 73 – 75, Landin et al. disclose "pits and grooves" in the plastic portion of the substrate (*Figures 4 and 4b, elements 32, 33, 35, 52, 53 and 54*).

4. Claims 28, 29, 54, 55, 71 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Landin et al. as applied above, and further in view of Wu et al. ('422).

Landin et al. is relied upon as described above.

Landin et al. fail to disclose the coercivity of the data storage layer.

However, Wu et al. teach that for high areal recording density, the "linear recording density can be increased by increasing the coercivity of the magnetic recording medium" (*col. 1, lines 23 – 33*) and further teaches coercivity values meeting applicants' claimed limitations as desired for high areal recording density recording media (*Figure 4A*).

It would therefore have been obvious to one having ordinary skill in the art to have modified the invention of Landin et al. by increasing the coercivity of the data storage layer to values meeting applicants' claimed limitations as taught by Wu et al., since an increased coercivity results in an increased areal recording density.

5. Claims 1 – 14, 17, 18, 20, 21, 24 – 26, 30 – 39, 42, 43, 45, 46 and 49 – 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '921 A. See provided Derwent Abstract Translation of JP '921 A.

Regarding claims 1 - 4, 26 and 30 - 34, JP '921 A disclose a data storage media comprising a substrate comprising at least one plastic portion (*Abstract - "substrate formed of plastics"*), and at least one data layer on said substrate (*Abstract – "a magnetic layer"*), wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field; and wherein when the energy field

contacts said data storage media, said energy field is incident upon said data layer before it could be incident upon said substrate (*in view of Figures since the protective lubricating layer is located between the magnetic layer and the side where the magnetic head would be*).

Regarding claim 26, the Examiner has interpreted the transitional phrase "consisting essentially of" as equivalent to "comprising" for the reasons noted above.

Regarding the limitations directed to "an edge-lift height" and "an axial displacement peak", the Examiner notes that it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily possess characteristics of claimed products where the rejection is based on *prima facie* obviousness under 35 USC 103. In the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Abstract and Figures).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of "an edge-lift height" and "an axial displacement peak" meeting applicants' claimed limitations would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed limitations of "an edge-lift height" and "an axial displacement peak" would not have necessarily been present in every embodiment taught by JP '921 A, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables such as the "edge lift height" and "axial displacement peak" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that low values of the edge lift and axial displacement peak are desired for increased areal recording density. See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding these properties.

JP '921 A fail to disclose a surface roughness meeting applicants' claimed limitations (i.e. less than 10 Å or less than 5 Å).

However, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variable "surface roughness" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that extremely low (i.e. < 10 Å) surface roughness values are required for near-field high density recording media. See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding the surface roughness.

Regarding independent claim 30, the claimed areal recording density is a function of the track width, track density and spatial location of the head relative to the medium, and is not a property solely of the media, per se, and therefor has been given

little weight in determining patentability since it is an intended-use limitation (see pertinent prior art cited below).

Regarding claims 5 – 13, 35 – 38 and 51 - 53, these claims are directed to property limitations of the claimed medium that are not explicitly disclosed by the JP '921 A reference. However, in the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Abstract and Figures).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of:

- a mechanical damping coefficient greater than 0.04 and 0.06 at a temperature of 24 °C (claims 5, 6, 35 and 36);
- a moment of inertia of less than 5.5×10^{-3} slug-in^2, 4.5×10^{-3} slug-in^2 and 4.0×10^{-3} slug-in^2 (claims 7 and 51 – 53);
- a radial and tangential tilt of less than 1° (claims 8 and 38);
- a moisture content which varies less than 0.5% at the claimed test conditions (claims 9 and 37);
- a specific gravity of less than 1.0 (claim 10);
- a resonant frequency of greater than 250 Hz (claim 11);
- a first modal frequency greater than an operating frequency (claim 12); and
- one or less modal frequencies less than an operating frequency (claim 13)

would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of

record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed property limitations would not have necessarily been present in every embodiment taught by JP '921 A, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables moment of inertia, the radial and tangential tilt, the moisture content variability, the specific gravity and the number of modal frequencies less than an operating frequency of the substrate, as well as increasing the mechanical damping coefficient, resonant frequency and first modal frequency to values meeting applicants' claimed limitations since one of ordinary skill in the art at the time of applicants' invention would recognize that controlling all of these properties to within applicants' claimed limitations are necessary, and desirable, to achieve a dimensionally stable, high start-stop time recording media for high areal recording density applications. See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding these properties.

Regarding claims 14, 17, 20, 39, 42 and 45, JP '921 A disclose cores (*Figure 1, element 1a*) meeting applicants' claimed limitations (i.e. solid core having substantially constant thickness) (*Abstract*). The examiner notes that the plastic substrate (*element 1a*) is a core comprising at least one filled cavity (i.e. the entire layer is "filled").

Regarding claims 18 and 43, JP '921 A disclose a support for a magnetic recording medium wherein the medium can be in the form of a disk. A disk would result

in a plastic support (i.e. applicants' "core") being in the shape of a ring, thereby meeting applicants' claimed limitations.

Regarding claims 21 and 46, JP '921 A disclose substrate and core materials meeting applicants' claimed limitations (*Abstract – i.e. the entire core comprises plastics or composite materials composed of plastics and ceramic*).

The limitation "preformed cores" and "formed in situ with said substrate" in claims 24, 25, 49 and 50 are product-by-process limitation and are not further limiting in so far as the structure of the product is concerned for the reasons cited above.

6. Claims 15, 16, 19, 22, 23, 27, 40, 41, 44, 47, 48 and 56 – 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '921 A as applied above, and further in view of Landin et al. ('774).

JP '921 A is relied upon as described above.

Regarding claims 15, 16, 19, 22, 23, 40, 41, 44, 47, 48 and 56 - 67, JP '921 A fail to disclose a core having a varied thickness meeting applicants' claimed limitations.

However, Landin et al. teach plastic cores of composite substrates having varied thickness and multiple portions (*Figure 4b, where the core varies from zero to non-zero across the width of the medium – elements 52 – 54*). Landin et al. further teach that the plastic core dimensions can be controlled depending on the area with the greatest vibrational stresses (*col. 5, lines 25 – 30*). The exact geometry of the core is therefore deemed an obvious matter of design choice to control where the most damping occurs (as well as controlling the moment of inertia and specific gravity of the substrate), since

such a modification of the core would have involved a mere change in the size of a component. A change in the size is generally recognized as being within the level of ordinary skill in the art.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of JP '921 A to include a core having varied thickness as taught by Landin et al. since varying the core dimensions can be used to optimize the damping, moment of inertia and specific gravity of the substrate, especially in the areas with the greatest vibrational stresses.

Regarding claims 27 and 68, Landin et al. teach plastics meeting applicants' claimed limitations as known substrate + core materials since they possess good damping properties (*col. 6, lines 1 – 2 and lines 42 – 67*).

Regarding claims 69 and 70, Landin et al. disclose adding fillers meeting applicants' claimed limitations inorder to improve the damping properties (*col. 7, lines 23 - 67*).

7. Claims 28, 29, 54, 55, 71 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '921 A as applied above, and further in view of Wu et al. ('422).

JP '921 A is relied upon as described above.

JP '921 A fail to disclose the coercivity of the data storage layer.

However, Wu et al. teach that for high areal recording density, the "linear recording density can be increased by increasing the coercivity of the magnetic recording medium" (*col. 1, lines 23 – 33*) and further teaches coercivity values meeting

applicants' claimed limitations as desired for high areal recording density recording media (*Figure 4A*).

It would therefore have been obvious to one having ordinary skill in the art to have modified the invention of JP '921 A by increasing the coercivity of the data storage layer to values meeting applicants' claimed limitations as taught by Wu et al., since an increased coercivity results in an increased areal recording density.

8. Claims 1 – 14, 17, 18, 20, 21, 24 – 39, 42, 43, 45, 46 and 49 – 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang ('964 B1).

Regarding claims 1 - 4, 26 and 30 - 34, Chang discloses a data storage media comprising a substrate comprising at least one plastic portion (*Figures; col. 4, lines 23 – 57; and Example 1*), and at least one data layer on said substrate (*col. 3, lines 54 – 60 and Example 1*), wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field; and wherein when the energy field contacts said data storage media, said energy field is incident upon said data layer before it could be incident upon said substrate (*in view of Figures and col. 4, lines 14 - 21 since the protective and lubricating layers are located between the magnetic layer and the side where the magnetic head would be*).

Regarding claim 26, the Examiner has interpreted the transitional phrase "consisting essentially of" as equivalent to "comprising" for the reasons noted above.

Regarding the limitations directed to "an edge-lift height" and "an axial displacement peak", the Examiner notes that it has been held that where claimed and

prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily possess characteristics of claimed products where the rejection is based on *prima facie* obviousness under 35 USC 103. In the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Figures; col. 4, lines 23 – 57 and Example 1).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of "an edge-lift height" and "an axial displacement peak" meeting applicants' claimed limitations would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed limitations of "an edge-lift height" and "an axial displacement peak" would not have necessarily been present in every embodiment taught by Chang, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables such as the "edge lift height" and "axial displacement peak" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that low values of the edge lift and axial displacement peak are desired for increased areal recording density.

See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding these properties.

Chang fails to disclose a surface roughness meeting applicants' claimed limitations (i.e. less than 10 Å or less than 5 Å).

However, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variable "surface roughness" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that extremely low (i.e. < 10 Å) surface roughness values are required for near-field high density recording media. See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding the surface roughness.

Regarding independent claim 30, the claimed areal recording density is a function of the track width, track density and spatial location of the head relative to the medium, and is not a property solely of the media, per se, and therefor has been given little weight in determining patentability since it is an intended-use limitation (see pertinent prior art cited below).

Regarding claims 5 – 13, 35 – 38 and 51 - 53, these claims are directed to property limitations of the claimed medium that are not explicitly disclosed by the Chang reference. However, in the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Figures; col. 4, lines 23 – 57 and Example 1).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of:

- a mechanical damping coefficient greater than 0.04 and 0.06 at a temperature of 24 °C (claims 5, 6, 35 and 36);
- a moment of inertia of less than 5.5×10^{-3} slug-in^2, 4.5×10^{-3} slug-in^2 and 4.0×10^{-3} slug-in^2 (claims 7 and 51 – 53);
- a radial and tangential tilt of less than 1° (claims 8 and 38);
- a moisture content which varies less than 0.5% at the claimed test conditions (claims 9 and 37);
- a specific gravity of less than 1.0 (claim 10);
- a resonant frequency of greater than 250 Hz (claim 11);
- a first modal frequency greater than an operating frequency (claim 12); and
- one or less modal frequencies less than an operating frequency (claim 13)

would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed property limitations would not have necessarily been present in every embodiment taught by Chang, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables moment of inertia, the radial and tangential tilt, the moisture content variability, the specific gravity and the number of modal frequencies less than an

operating frequency of the substrate, as well as increasing the mechanical damping coefficient, resonant frequency and first modal frequency to values meeting applicants' claimed limitations since one of ordinary skill in the art at the time of applicants' invention would recognize that controlling all of these properties to within applicants' claimed limitations are necessary, and desirable, to achieve a dimensionally stable, high start-stop time recording media for high areal recording density applications. See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding these properties.

Regarding claims 14, 17, 20, 39, 42 and 45, Chang discloses cores (*Figures*) meeting applicants' claimed limitations (i.e. solid core having substantially constant thickness). The examiner notes that the core (*Figures 3 and 4*) is a core comprising at least one filled cavity (i.e. the entire layer is "filled").

Regarding claims 18 and 43, Chang discloses a support for a magnetic recording medium wherein the medium can be in the form of a disk (*col. 2, lines 60 – 61*). A disk would result in a plastic support (i.e. applicants' "core") being in the shape of a ring, thereby meeting applicants' claimed limitations.

Regarding claims 21 and 46, Chang discloses substrate and core materials meeting applicants' claimed limitations (*Figures and col. 4, lines 21 - 27 – i.e. the entire core comprises plastic*).

The limitation "preformed cores" and "formed in situ with said substrate" in claims 24, 25, 49 and 50 are product-by-process limitation and are not further limiting in so far as the structure of the product is concerned for the reasons cited above.

Regarding claim 27, Chang discloses polymers meeting applicants' claimed limitations (*col. 4, lines 54 – 57*).

Regarding claims 28, 29, 54 and 55, Chang discloses coercivity values meeting applicants' claimed limitations (*col. 3, lines 54 – 57*).

9. Claims 15, 16, 19, 22, 23, 40, 41, 44, 47, 48 and 56 – 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang as applied above, and further in view of Landin et al. ('774).

Chang is relied upon as described above.

Regarding claims 15, 16, 19, 22, 23, 40, 41, 44, 47, 48, 56 – 67, 71 and 72, Chang fails to disclose a core having a varied thickness meeting applicants' claimed limitations.

However, Landin et al. teach plastic cores of composite substrates having varied thickness and multiple portions (*Figure 4b, where the core varies from zero to non-zero across the width of the medium – elements 52 – 54*). Landin et al. further teach that the plastic core dimensions can be controlled depending on the area with the greatest vibrational stresses (*col. 5, lines 25 – 30*). The exact geometry of the core is therefore deemed an obvious matter of design choice to control where the most damping occurs (as well as controlling the moment of inertia and specific gravity of the substrate), since such a modification of the core would have involved a mere change in the size of a component. A change in the size is generally recognized as being within the level of ordinary skill in the art.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Chang to include a core having varied thickness as taught by Landin et al. since varying the core dimensions can be used to optimize the damping, moment of inertia and specific gravity of the substrate, especially in the areas with the greatest vibrational stresses.

Regarding claims 27 and 68, Landin et al. teach using plastics meeting applicants' claimed limitations as known substrate + core materials since they possess good damping properties (*col. 6, lines 1 – 2 and lines 42 – 67*).

Regarding claims 69 and 70, Landin et al. disclose adding fillers meeting applicants' claimed limitations inorder to improve the damping properties (*col. 7, lines 23 - 67*).

10. Claims 73 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang as applied above, and further in view of Lazzari ('967).

Chang is relied upon as referred to above.

Chang fails to disclose a substrate possessing "pits and groves" in the plastic portion, though Chang discloses a substrate comprising a polymeric coating above a rigid core (*Example 1: brass core coated with PVC derivative*).

However, Lazzari teaches that substrates comprising a metallic core coated with a polymeric material can have the polymeric material be textured into pits and grooves (*Figure 4*) inorder "to bring about a good separation of the recording tracks, which has the advantage of reducing crosstalk" (*col. 3, line 20 bridging col. 4, line 2*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Chang to texture the plastic coating to possess "pits and grooves" as taught by Lazzari inorder "to bring about a good separation of the recording tracks, which has the advantage of reducing crosstalk".

11. Claim 75 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang in view of Landin et al. as applied above, and further in view of Lazzari ('967).

Chang in view of Landin et al. is relied upon as referred to above.

Chang in view of Landin et al. fail to disclose a substrate possessing "pits and groves" in the plastic portion, though Chang discloses a substrate comprising a polymeric coating above a rigid core (*Example 1: brass core coated with PVC derivative*).

However, Lazzari teaches that substrates comprising a metallic core coated with a polymeric material can have the polymeric material be textured into pits and grooves (*Figure 4*) inorder "to bring about a good separation of the recording tracks, which has the advantage of reducing crosstalk" (*col. 3, line 20 bridging col. 4, line 2*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Chang in view of Landin et al. to texture the plastic coating to possess "pits and grooves" as taught by Lazzari inorder "to bring about a good separation of the recording tracks, which has the advantage of reducing crosstalk".

12. Claims 1 - 27, 30 – 53, 56 and 58 - 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otada et al. (JP '817 A). See provided Abstract Translation of JP '817 A.

Regarding claims 1 - 4, 26 and 30 – 34, Otada et al. disclose a data storage media comprising a substrate comprising at least one plastic portion (*Abstract - "heat resistant plastic layer"*), and at least one data layer on said substrate (*Abstract "and magnetic layer"*), wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field; and wherein when the energy field contacts said data storage media, said energy field is incident upon said data layer before it could be incident upon said substrate (*in view of Figures and Abstract since the magnetic layer is deposited after the underlying layer and it is known in the art that the underlayers are located on the opposite side of the magnetic layer from the side where the magnetic head would be*).

Regarding claim 26, the Examiner has interpreted the transitional phrase "consisting essentially of" as equivalent to "comprising" for the reasons noted above.

Regarding the limitations directed to "an edge-lift height" and "an axial displacement peak", the Examiner notes that it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily possess characteristics of claimed products where the rejection is based on *prima facie* obviousness under 35 USC 103.

In the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Abstract and Figures).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of "an edge-lift height" and "an axial displacement peak" meeting applicants' claimed limitations would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed limitations of "an edge-lift height" and "an axial displacement peak" would not have necessarily been present in every embodiment taught by Otada et al., it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables such as the "edge lift height" and "axial displacement peak" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that low values of the edge lift and axial displacement peak are desired for increased areal recording density. See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding these properties.

Otada et al. fail to disclose a surface roughness meeting applicants' claimed limitations (i.e. less than 10 Å or less than 5 Å).

However, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variable "surface roughness" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that extremely low (i.e. < 10 Å) surface roughness values are required for near-field high density recording media. See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding the surface roughness.

Regarding independent claim 30, the claimed areal recording density is a function of the track width, track density and spatial location of the head relative to the medium, and is not a property solely of the media, per se, and therefor has been given little weight in determining patentability since it is an intended-use limitation (see pertinent prior art cited below).

Regarding claims 5 – 13, 35 – 38 and 51 - 53, these claims are directed to property limitations of the claimed medium that are not explicitly disclosed by the Otada et al. reference. However, in the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Abstract and Figures)*.

Therefore, in addition to the above disclosed limitations, the presently claimed properties of:

- a mechanical damping coefficient greater than 0.04 and 0.06 at a temperature of 24 °C (claims 5, 6, 35 and 36);

- a moment of inertia of less than 5.5 x 10^{-3} slug-in^2, 4.5 x 10^{-3} slug-in^2 and 4.0 x 10^{-3} slug-in^2 (claims 7 and 51 – 53);
- a radial and tangential tilt of less than 1° (claims 8 and 38);
- a moisture content which varies less than 0.5% at the claimed test conditions (claims 9 and 37);
- a specific gravity of less than 1.0 (claim 10);
- a resonant frequency of greater than 250 Hz (claim 11);
- a first modal frequency greater than an operating frequency (claim 12); and
- one or less modal frequencies less than an operating frequency (claim 13)

would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed property limitations would not have necessarily been present in every embodiment taught by Otada et al., it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables moment of inertia, the radial and tangential tilt, the moisture content variability, the specific gravity and the number of modal frequencies less than an operating frequency of the substrate, as well as increasing the mechanical damping coefficient, resonant frequency and first modal frequency to values meeting applicants' claimed limitations since one of ordinary skill in the art at the time of applicants' invention would recognize that controlling all of these properties to within applicants'

claimed limitations are necessary, and desirable, to achieve a dimensionally stable, high start-stop time recording media for high areal recording density applications. See Paragraph No. 27 of the Office Action mailed on February 10, 2003 (Paper No. 10) for references illustrating the general knowledge in the art regarding these properties.

Regarding claims 14, 17, 20, 39, 42 and 45, Otada et al. disclose cores (*Figures 1, 2 and 4, element 1*) meeting applicants' claimed limitations (i.e. solid core having substantially constant thickness) (*Abstract*). The examiner notes that the ceramic substrate (*Figures 1, 2 and 4 - element 1*) is a core comprising at least one filled cavity (i.e. the entire layer is "filled").

Regarding claims 15, 16, 18, 19, 22, 23, 40, 41, 43, 44, 47, 48, 56 - 61, 63, 64 and 67, Otada et al. disclose cores of composite substrates having varied thickness and multiple portions (*Figure 3, where the core varies from zero to non-zero across the width of the medium and wherein the interior sections of element 1 would be filled by the heat resistant plastic layer, resulting in a "core" layer comprising both ceramic and plastic, the entire "core" coated by additional heat resistant plastic*). The exact geometry of the core is therefore deemed an obvious matter of design choice to control where the most damping occurs (as well as controlling the moment of inertia and specific gravity of the substrate), since such a modification of the core would have involved a mere change in the size of a component. A change in the size is generally recognized as being within the level of ordinary skill in the art. In addition, it is known to one of ordinary skill in the art that the material and dimensions of the core will effect the

damping properties, as well as the moment of inertia and specific gravity of the substrate (see pertinent prior art cited below).

Regarding claims 21, 46 and 62, Otada et al. disclose substrate and core materials meeting applicants' claimed limitations (*Abstract and Figures – " the ceramic substrate 1"*).

The limitation "preformed cores" and "formed in situ with said substrate" in claims 24, 25, 49, 50, 65 and 66 are product-by-process limitation and are not further limiting in so far as the structure of the product is concerned for the reasons cited above.

Regarding claims 27 and 68, Otada et al. disclose plastics meeting applicants' claimed limitations (*Abstract – polyether imide*).

13. Claims 69 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otada et al. as applied above, and further in view of Landin et al. ('774).

Otada et al. is relied upon as described above.

Otada et al. fail to disclose adding reinforcements to the heat resistant plastic layer.

However, Landin et al. teach adding fillers meeting applicants' claimed limitations to plastic layers in composite substrates inorder to improve the damping and physical properties of the plastic layers (*col. 7, lines 23 – 67 and col. 9, lines 10 - 15*).
It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Otada et al. to include fillers meeting

applicants' claimed limitations as taught by Landin et al. inorder to improve the damping and physical properties of the plastic layers.

14. Claims 28, 29, 54, 55, 71 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otada et al. as applied above, and further in view of Wu et al. ('422).

Otada et al. is relied upon as described above.

Otada et al. fail to disclose the coercivity of the data storage layer.

However, Wu et al. teach that for high areal recording density, the "linear recording density can be increased by increasing the coercivity of the magnetic recording medium" (*col. 1, lines 23 – 33*) and further teaches coercivity values meeting applicants' claimed limitations as desired for high areal recording density recording media (*Figure 4A*).

It would therefore have been obvious to one having ordinary skill in the art to have modified the invention of Otada et al. by increasing the coercivity of the data storage layer to values meeting applicants' claimed limitations as taught by Wu et al., since an increased coercivity results in an increased areal recording density.

15. Claims 73 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otada et al. as applied above, and further in view of Lazzari ('967).

Otada et al. is relied upon as referred to above.

Otada et al. fail to disclose a substrate possessing "pits and groves" in the plastic portion, though Otada et al. disclose a substrate comprising a polymeric coating above a rigid core (*Abstract: ceramic core coated with polyether imide*).

However, Lazzari teaches that substrates comprising a rigid core coated with a polymeric material can have the polymeric material textured into pits and grooves (*Figure 4*) inorder "to bring about a good separation of the recording tracks, which has the advantage of reducing crosstalk" (*col. 3, line 20 bridging col. 4, line 2*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Chang to texture the plastic coating to possess "pits and grooves" as taught by Lazzari inorder "to bring about a good separation of the recording tracks, which has the advantage of reducing crosstalk".

Response to Arguments

16. The rejection of claims 1 - 72 under 35 U.S.C § 112 – 1st Paragraph

The above noted rejection has been withdrawn in view of applicant(s) arguments, which have been found persuasive. Specifically, applicant(s) argue that the scope of the claims are commensurate with the scope of the disclosure.

17. The rejection of claims 1 – 11, 28 – 38, 51 – 55, 71 and 72 under 35 U.S.C § 112 – 2nd Paragraph

The above noted rejection has been withdrawn in view of applicant(s) arguments, which have been found persuasive. Specifically, applicant(s) argue that one of ordinary skill in the art would be readily appraised of the scope of the claims since the use of the term "about" with "less than", or its equivalents, is an accepted practice in the magnetic recording art.

18. The rejection of claims 1 - 72 under 35 U.S.C § 103(a) – Landin et al., alone or in combination with various references

The rejection of claims 1 - 72 under 35 U.S.C § 103(a) – JP '921 A, alone or in combination with various references

The rejection of claims 1 - 72 under 35 U.S.C § 103(a) – Otada et al., alone or in combination with various references

The rejection of claims 1 - 72 under 35 U.S.C § 103(a) – Chang, alone or in combination with various references

In all three of the above rejections, applicant(s) argue(s) three main points. First, applicants argue that the Examiner has not provided motivation for optimizing the claimed properties to within applicants' claimed limitations. Second, applicants argue that even though "a particular property may be desirable, [it] does not render the property inherent or even obvious". Finally, applicants' argue that the areal recording density is a function of the substrate properties only and that the Examiners' statement

that the areal recording density is not solely a property of the media, per se, is improper. In all of the above, the examiner respectfully disagrees.

With regard to applicants' argument that the Examiner has not provided a *prima facie* case of obviousness by lacking motivation to optimize, the Examiner notes that many references have been cited of record to illustrate the general state of the art and the fact that one of ordinary skill in the art at the time of applicants' invention not only recognized the properties claimed by applicants, but also recognized the desired ranges for these properties. It is *prima facie* obvious from the collective teachings in the prior art to determine the optimum working value of known properties. *In re Geisler*, 116 F. 3d 1465, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980); *In re Aller*, 220 F.2d, 454, 456, 105 USPQ 233, 235 (CCPA 1955). Furthermore, once a *prima facie* case of obviousness is established, the burden of going forward, e.g. by providing unexpected results, rest on the applicants. *In re Piasecki*, 745 F2d, 1468, 1672, 223 USPQ 785, 788 (Fed. Cir. 1984); *In re Mayne*, 104 F.3d 1339, 1343, 41 USPQ2d, 1451, 1455 (Fed. Cir. 1997).

Regarding the argument that the claimed properties may not be necessarily present, even if recognized as desirable in the prior art, the Examiner notes there is presently no evidence of record refuting the Examiner's sound basis for asserting that the properties are a necessary result of the combination of a rigid material and a polymeric material formed into a recording media substrate. Attorney arguments are not considered evidence and no comparative data versus the closest prior art has been presented.

Finally, with regard to the claimed areal recording density, the Examiner notes that several references of record clearly indicate that the recording density is not a function solely of the media, but of the track width, density and head spacing (*Paragraph 27 of the Office Action mailed February 10, 2003 – Paper No. 10*).

With regard to the Chang reference, applicants further argue that Chang is directed to a "flexible" substrate and would, therefore, clearly not read on applicants' claimed properties. The examiner respectfully disagrees.

The Examiner notes that there is no evidence of record that the disclosed substrates taught by Chang, (*e.g. a "brass sheet ... having a thickness of 0.002 inch ... coated with ... 12% of a polyvinyl chloride derivative ("VAGH") in cyclohexanone"*) would not necessarily possess the claimed properties. The Examiner notes that "floppy", "flexible" and "rigid" are all relative terms and "flexible" substrates can still be "rigid", depending on the materials and thickness values used. Presently, there is no evidence illustrating that a substrate prepared by the Chang teachings could not meet applicants' claimed limitations.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

KMB
June 24, 2003

Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700